

EXHIBIT 4



US v Wang Forensic Expert Report

Prepared for: Dykema Gossett PLLC

**Prepared by: Ankura Cyber Threat Investigations and Expert Services
(CTIX) Team**

July 2025

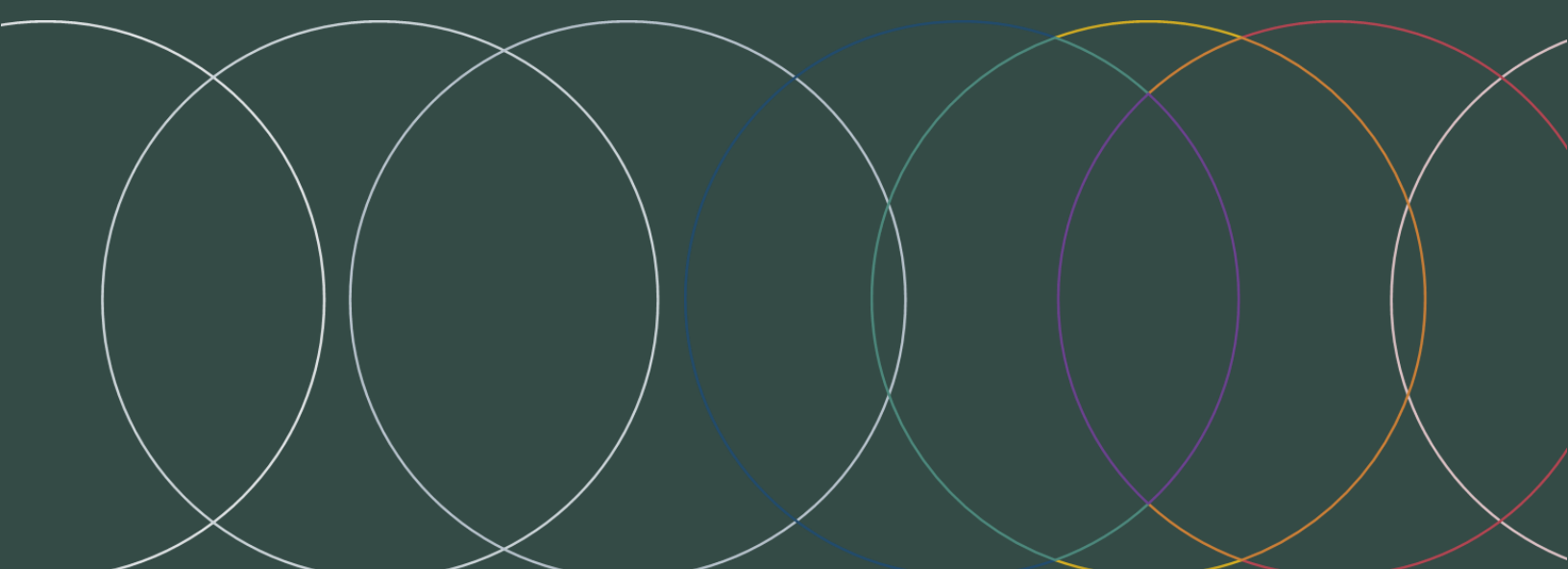




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1 BACKGROUND AND SCOPE OF WORK

Dykema ("Counsel") engaged Ankura Consulting Group (Ankura) to perform a forensic metadata analysis of .jpg files with Photoshop metadata, PowerPoint files, and Grant applications as well as provide expert opinion on hash values.

Ankura reviewed Counsel provided documentation to include the "raw" and "white box" images noted in the report below as well as the intermediate PowerPoint, and the associated Grant.

Ankura's review focused specifically on forensic metadata analysis. In addition, Ankura interviewed Dr. Wang on July 23, 2025, to gain understanding of his general workflow to determine if images embedded within the intermediate PowerPoint, and the associated Grant could be identified by unique hash value.

A summary of findings is as follows:

1. Chronology re: Grant 5, Figure 3:
 - a. Ankura was able to identify eight (8) files that appear to be part of the process associated with Figure 3.
2. Replication/testing of Dr. Wang's General process (from a hash analysis perspective):
 - a. Ankura's digital forensic expert was able to replicate steps 3-6 of the process Dr. Wang described during the interview on July 23, 2025.
3. Hash Value Analysis:
 - a. Ankura determined that the images embedded within the intermediate PowerPoint, and the associated Grant could not be identified by unique hash value.

2 METHODOLOGY

2.1 Chronology of Key Events Identified re: Grant 5, Figure 3

Ankura's digital forensic expert reviewed the chronology of events associated with Grant 5, Figure 3 regarding the documentation provided by Counsel. Ankura's forensic expert identified the "raw" and "white box" images noted in Section 3 below as well as the intermediate PowerPoint and the associated Grant. These files were reviewed in relation to Dr. Wang's general process that he described during the July 23, 2025 interview.

2.2 Replication/Testing of Dr. Wang's General Process

Ankura's digital forensic expert interviewed Dr. Wang on July 23, 2025, and understood his general process as below:

1. Scan the selected "Western Blot" films (result is a .tiff file)



2. Open .tiff file with tool ImageJ and save out as a JPEG/JPG
3. Open JPEG/JPG with Photoshop
 - a. adjust contrast and brightness for the entire image
4. In Photoshop, frame and crop specific area
 - a. save the selection as a JPEG/JPG
 - b. paste the JPEG/JPG into PowerPoint
5. Once in PowerPoint, the individual rows are outlined, and each band is labeled to create the panel
6. Once the panel is completed in PowerPoint, it is saved in one of two ways:
 - a. The PowerPoint slide is saved as a .tiff (this is done when the PowerPoint would be larger than 10MB since it needs to be emailed)
 - b. The PowerPoint slide is saved as an image and pasted into a new slide and the original slide is deleted (this is done when the PowerPoint is under 10MB).

Steps 1 & 2 were not replicated or tested by the Ankura team as both steps are out of scope for forensic metadata analysis:

1. Scan the “Western Blot” films (result is a .tiff file)
2. Open .tiff file with tool ImageJ and save out as a JPEG/JPG

Ankura’s digital forensic expert was able to recreate steps 3-6. For purposes of testing the steps 3-6 of Dr. Wang’s general process, Ankura utilized the following JPG file: *butterfly.jpg*



butterfly.jpg

This file was downloaded by Ankura’s digital forensic expert and hashed prior to the testing of Dr. Wang’s general process.

The MD5 hash value for this file is:

C0ED5B763C552260B2B8BB0D419176CF

For steps 3 & 4, Ankura utilized Adobe Photoshop 2025 Version: 26.8.1.



IMPORTANT NOTE: Ankura adjusted the contrast and brightness for the entire image as Dr. Wang noted during the interview; however, Ankura does not have specifics regarding the contrast and brightness adjustments utilized in the “Western Blot” process. Ankura’s adjustments to the contrast and brightness were selected to clearly show changes.

For steps 5 & 6, Ankura utilized Microsoft® PowerPoint® for Microsoft 365 MSO (Version 2506).

2.3 Forensic Hash Analysis Methodology

A hash value is a digital fingerprint unique to each file; if file content is changed then the hash value will change. The hash value is a fixed-size string of characters which is generated by a mathematical process and the output is a unique digital fingerprint.

Ankura’s digital forensic expert utilized various industry standard forensic tools to obtain the hash value for the following files:

- 125p2a-plasma pS2152 -1.jpg
- 125p2a-plasma-Alb-GAPDH-1.jpg
- 125p2a-plasma-M58420H7-1.jpg
- 125p2a-plasma pS2152-1-11.jpg
- 125p2a-plasma-Alb-GAPDH-1-11.jpg
- 125p2a-plasma-M58420H7-1-11.jpg
- 125p2a-plasma- Alb-GAPDH-1-112.jpg
- Lymphocyte -90KDa-Origene-M58420H7-CASSAVA.pptx

Ankura’s digital forensic expert opened the PowerPoint file *Lymphocyte -90KDa-Origene-M58420H7-CASSAVA.pptx* and reviewed the contents. Ankura’s digital forensic expert determined that the individual images had been merged into a chart before being embedded into PowerPoint, and as a result, they could not be saved separately as individual images from the presentation. Consequently, these images could not be exported or hashed for comparison.

This appears consistent with the steps that Dr. Wang described during the July 23, 2025, interview with Ankura.

Similarly, Ankura’s digital forensic expert opened the PDF version of the Grant 5 file, titled *Grant 5 – 57329-03 [Proposal 2]* and reviewed the contents. Ankura’s digital forensic expert found that the individual images within the document could not be extracted because they had also been merged prior to embedding. Therefore, they could not be exported or hashed for comparison. The Grant 5 file was also converted from a PDF to a Word document, but the individual images still could not be exported from the Word file.



3 FINDINGS

3.1 Chronology of Key Events Identified re: Grant 5, Figure 3 Findings

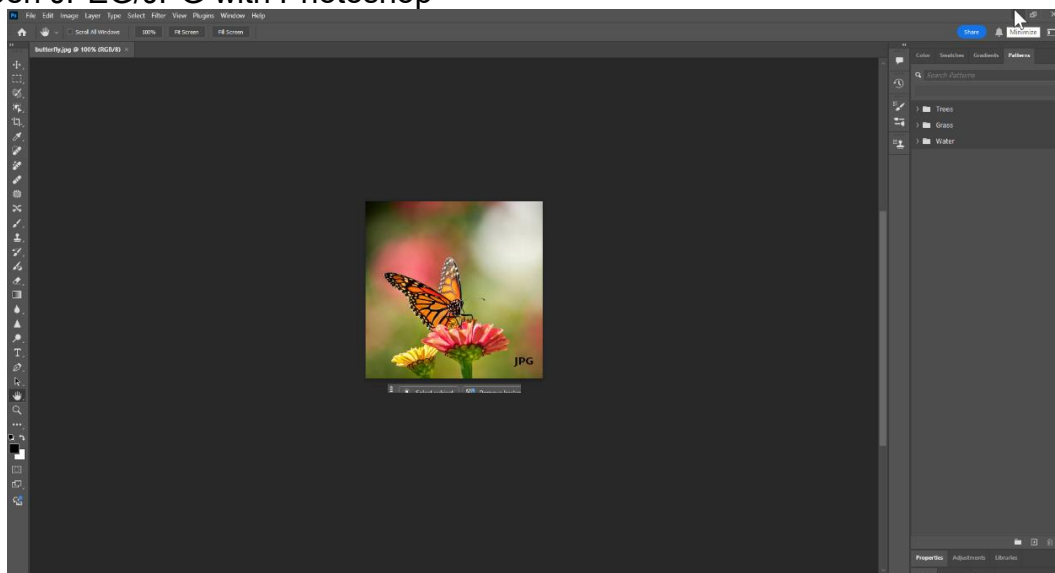
Ankura's review of the key events identified the following eight (8) files that appear to be part of the process associated with Grant 5, Figure 3:

- 125p2a-plasma pS2152-1.jpg
- 125p2a-plasma-Alb-GAPDH-1.jpg
- 125p2a-plasma-M58420H7-1.jpg
- 125p2a-plasma pS2152-1-11.jpg
- 125p2a-plasma-Alb-GAPDH-1-11.jpg
- 125p2a-plasma-M58420H7-1-11.jpg
- 125p2a-plasma- Alb-GAPDH-1-112.jpg
- Lymphocyte -90KDa-Origene-M58420H7-CASSAVA.pptx

3.2 Replication/Testing of Dr. Wang's General Process Findings

As previously noted, Steps 1 & 2 were not replicated or tested by the Ankura team as both steps are out of scope for forensic metadata analysis associated with the images within the PowerPoint and Grant.

1. Scan the "Western Blot" films (result is a .tiff file) – Not tested; out of scope.
2. Open .tiff file with tool ImageJ and save out as a JPEG/JPG – Not tested; out of scope.
3. Open JPEG/JPG with Photoshop



Butterfly.jpg opened within Photoshop

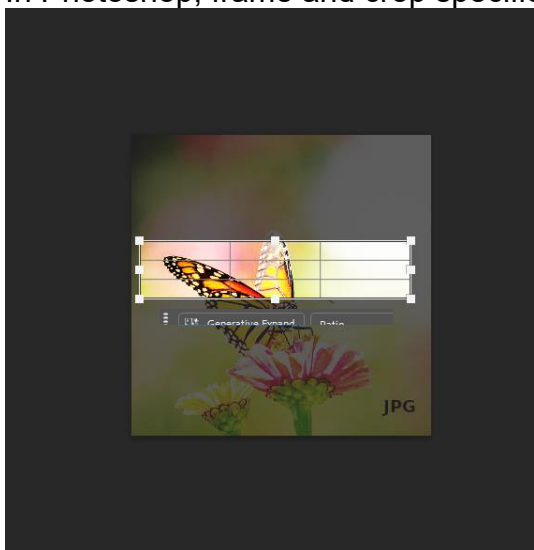
- a. adjust contrast and brightness for the entire image



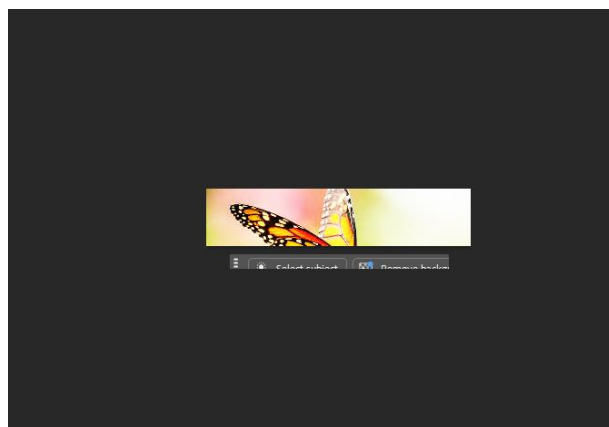
butterfly copy_brightness_contrast_adjusted.jpg

The MD5 hash value for this new file is: **1F5239FFA11EE3518EA8DFA5DE0C6461**

4. In Photoshop, frame and crop specific area



Screenshot showing selection



Screenshot showing cropped selection

- a. save the selection as a JPEG/JPG



butterfly_crop.jpg

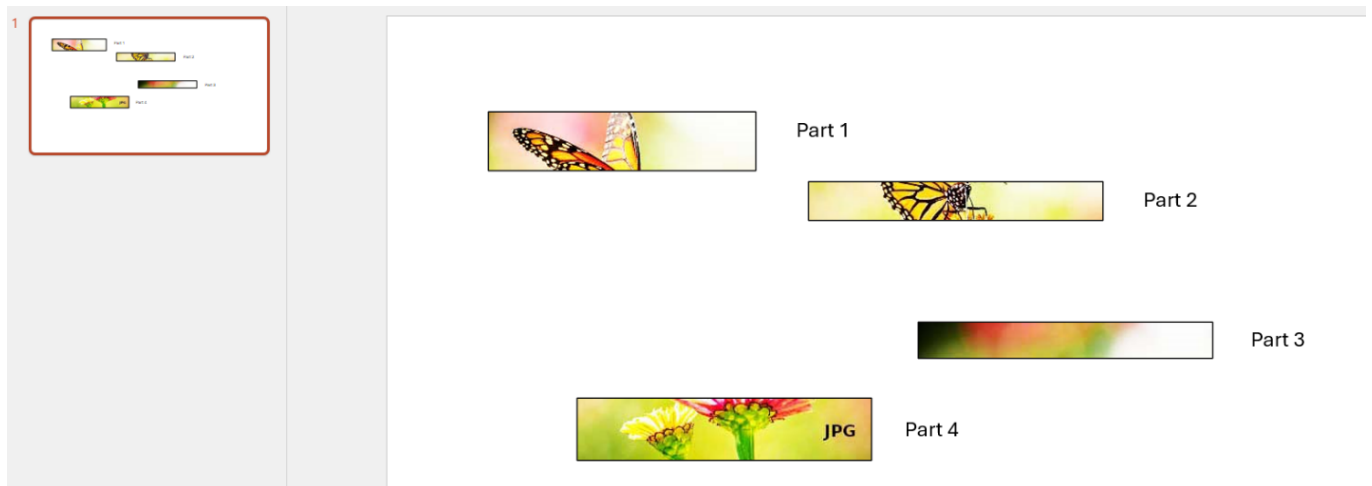
- b. paste the JPEG/JPG into PowerPoint



PowerPoint slide with cropped selections pasted

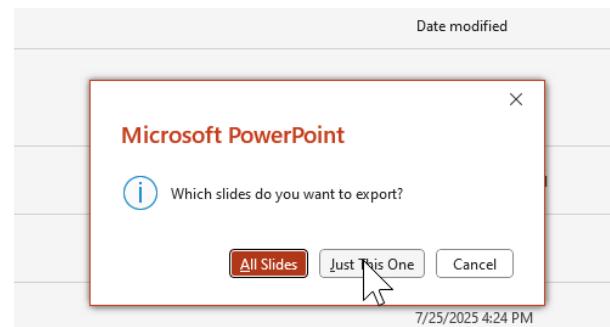
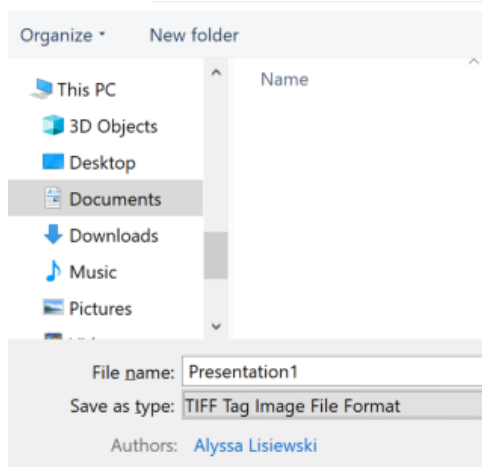
****Ankura repeated step 4 three (3) additional times****

5. Once in PowerPoint, the individual rows are outlined, and each band is labeled to create the panel

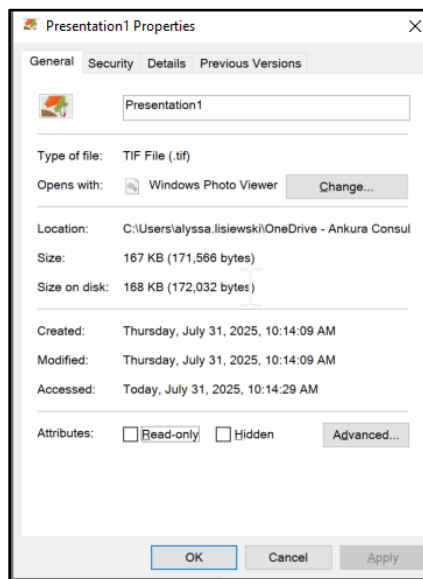


PowerPoint slide with outlines and labels

6. Once the panel is completed in PowerPoint, it is saved in one of two ways:
 - a. The PowerPoint slide is saved as a .tiff (this is done when the PowerPoint would be larger than 10MB since it needs to be emailed)

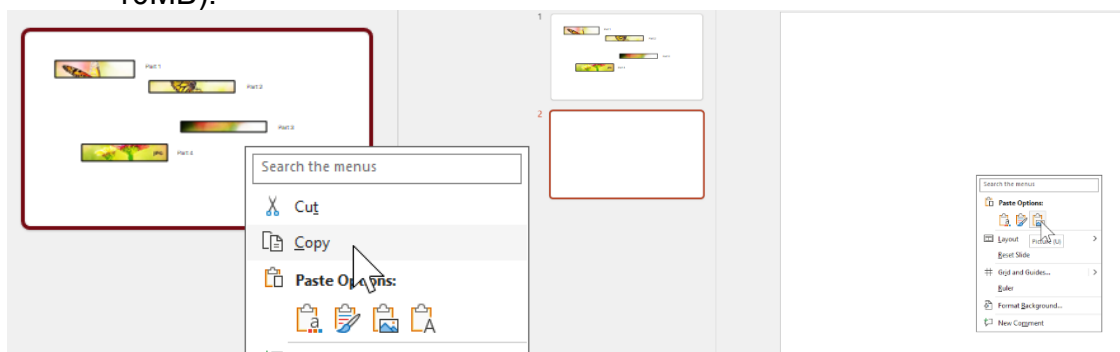


Saving PowerPoint slide as .tiff



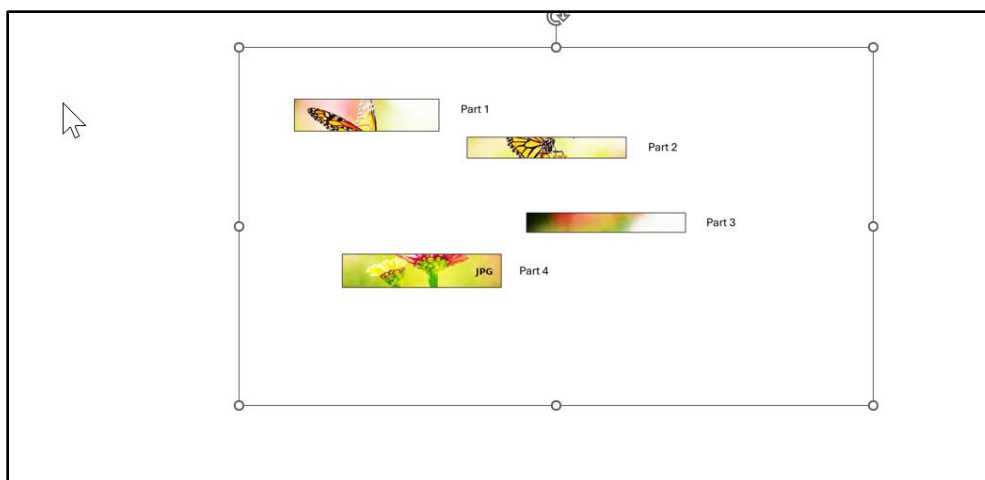
Details of PowerPoint slide saved as .tiff

- b. The PowerPoint slide is saved as an image and pasted into a new slide and the original slide is deleted (this is done when the PowerPoint is under 10MB).



Copying of PowerPoint slide

Paste as picture into new PowerPoint slide



Pasted picture into new PowerPoint slide

Ankura's digital forensic expert was able to replicate steps 3 – 6 of the general process Dr. Wang described during the interview on July 23, 2025. The process of cropping the images within Photoshop and pasting into PowerPoint, as well as saving the slide in both formats (as a .tiff and as a picture on its own slide), resulted in merged images that could no longer be hashed at an individual level for comparison.

3.3 Forensic Hash Analysis

The individual images were not present as separate entities within the PowerPoint file or within the Grant file. The merged content within these files could not be hashed at the individual row or "white box" level, and there was no available method to match the images based on hash value. At the time of Ankura's analysis, Ankura's digital forensic expert was not aware of any digital forensic process capable of identifying and isolating individual image components by hash value. Therefore, Ankura cannot confirm that these images are the same based on hash comparison.

MD5 hash values were noted for the following files that were identified during the review of the key events.

	Filename	Hash MD5
"raw" image 1	125p2a-plasma pS2152-1.jpg	b7b5d94ce9c0fe210d3aa661246a7df2
"White Box" image 1	125p2a-plasma pS2152-1-11.jpg	c75c12aa4de9dee554bf376121213287
"raw" image 2	125p2a-plasma-Alb-GAPDH-1.jpg	a3e0cfb4232d492abd474ac4592929c6
"White Box" image 2	125p2a-plasma-Alb-GAPDH-1-11.jpg	77ccdc9c2027c51046083526266df935



“White Box” image 4	125p2a-plasma-Alb-GAPDH-1-112.jpg	61755c070785b0b1ea9aa3dc8e0745ff
“raw” image 3	125p2a-plasma-M58420H7-1.jpg	63bbc9c894543d1c8237ffc0d3415a89
“White Box” image 3	125p2a-plasma-M58420H7-1-11.jpg	7634e383cbb6b4024e89a899addcfd7b
PowerPoint	Lymphocyte -90KDa-Origene-M58420H7-CASSAVA.pptx	7a528e52fae190f3a249106a90214111